How We Came to Mind the Gap: Time, Tactility, and the Tube

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Teresa Lubienska was not without enemies. As a countess who had been in the Polish Resistance, interned in Ravensbrück, and since migrating to Britain in 1946 chaired the association providing relief to Polish ex-political prisoners, she had ample reason and means to settle old grievances and, the police inferred, make new ones.[1] But despite this, it was still shocking news that on the night of Friday 24 May 1957 the seventy-three-year-old had been stabbed on a platform of Gloucester Road tube station, West London. Ticket collector Emanuel Akinyemi was stood in lift No. 3, listening for passengers. When the cry 'Bandits!' reached him, he glanced down the passageway, catching sight of Lubienska staggering by the stairs. Akinyemi brought her up to the booking hall, from which she was rushed to St Mary Abbot's Hospital. She died at 11 p.m.[2]

We know that Lubienska attended a party that evening, left with a Polish priest who accompanied her on the tube as far as Earl's Court, and had only one station to go after the priest alighted.[3] But the murder was never solved. More revealing than her puzzling death are the 575 statements collated by the police enquiry, a snapshot of the eighteen thousand interviews allegedly conducted between late-May and late-August 1957 and most from tube passengers volunteering information about their journeys that they thought pertinent to the case.[4] As textured accounts of 1950s tube travel, these provide openings into thinking more broadly about the relation between touch, personal space, and time in a proximate space exemplary of, and peculiar to, modernity. Often recounting when normative passenger relations were transgressed, these statements reveal ordinary conditions of travel through extraordinary occurrences: an archive of the incidental.

Given that the incidental appears so normal it seems controversial to suggest that it has a history. But the statements show that what we take for granted as personal space is actually historically specific. We can tease this out through Cyril Power's 1934 linocut *The*

[1] *The Times*, 27 May 1957, 6; *The Times*, 20 August 1957, 4.

[2] The National Archives: Public Record Office, Kew, MEPO/2/11018, Emanuel Akinyemi, 24 May and 27 May 1957, Vivian Devan, 30 May 1957.

[3] TNA:PRO MEPO/2/11018, Kazimerz Krzyzanowski, 25 May and 29 May 1957.

[4] *The Times*, 20 August 1957, 4.

Tube Train (Fig.1) which also serves as the cover image of James Vernon's account of 'how Britain became modern'.[5] A decade earlier Power argued that the 'satanic strength' of modern industry called for an equivalent artistic 'sternness of treatment'.[6] His image bore this out, the oversized bodies of passengers conforming to the car's curvature, angular limbs mirroring the angularity of newspapers that preserved each passenger's isolation in the midst of their proximity. Touch was prevented at all costs. For Vernon, this marked the end-point of a century-long process by which an increase in population size, density, and mobility made Britain a 'society of strangers': although these changes also entailed reanimation of personal relationships, tube cars heightened worry over the loss of personal space as an increasingly diverse mix of passengers were thrown together and forced to develop new strategies of indifference.[7] But far from being *a priori*, personal space crystallized only in and through the transformation of bodily transactions that informed and were informed by physical transformations of the tube. Power's linocut represents not the 'loss' of preexisting personal space, but the *production* of that space in interaction with seemingly minor changes in tube travel including electrification, de-compartmentalization, and straphanging.

Personal space was specific to the evolving material conditions of the tube. When, for example, Arthur Tribe informed a 'young foreign looking man' rushing down the stairs of South Kensington station that 'We keep to the right in England', he expressed a tacit etiquette of space that only emerged with the introduction of escalators in the Underground in 1911.[8]

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[5] James Vernon, *Distant Strangers: How Britain Became Modern* (Berkeley: London, 2014).

[6] Philip Vann, *Cyril Power Linocuts: A Complete Catalogue* (Farnham, 2008), 22-23.

[7] Vernon, *Distant Strangers*, xi, 8, 35-37. For a comparable reading of a contemporaneous painting of the New York Subway, see Christoph Lindner on James W. Kerr's *7th Avenue Subway*, 1931, in Christoph Lindner, *Imagining New York City: Literature, Urbanism, and the Visual Arts, 1890-1940*, (Oxford, 2015), 163-165. The similarity of Linder's reading to Vernon's suggests a greater equivalence between American and British modernity than the latter's emphasis on British peculiarity allows. It does, however, support Vernon's critique of the pluralization, and weakening, of modernity as an analytic category. James Vernon and Simon Gunn, 'What Was Liberal Modernity and Why Was It Peculiar in Imperial Britain?', in James Vernon and Simon Gunn (eds.), *The Peculiarities of Liberal Modernity in Imperial Britain* (Berkeley: London, 2011), 5-6, 12.

[8] TNA:PRO, MEPO/2/11019, Arthur Tribe, 25 July 1957.

But the statements call for more than a history of tube architecture and technology or even a history 'of' personal space, as if the concept preexisted the practice.[9] They instead show that, like an embodied speech act, personal space was realized only in the particularity of every passenger action, its conceptual existence contingent upon each interaction between changing tube space and the bodies occupying it. Tribe did not merely 'articulate' an existing etiquette of space but brought it into being anew, investing it with his own, national connotations. Personal space was *improvised*, concept and bodily practice mutually shaping one another, rather than either preexisting or being passively 'determined' by physical changes in the tube.

If personal space was improvised, then it was also increasingly improvisation*al*. The opening up of tube cars since the early 1900s—for example through introducing central doors in cars—meant that by the 1950s passengers faced a physically indeterminate space within which they had to improvise relations with one another. June Kitchin recounted how, one night in May 1957, three standing 'youths' spent the journey 'trying to kick each other in the pants and standing on each other[']s toes' until they were told to stop.[10] As rising passenger numbers and innovations like grab straps made it more necessary and possible to stand, passengers had to improvise between tacitly agreeing and explicitly enforcing personal space. Underpinning this improvisation were two major transformations: the transferral of private tube lines to public ownership and rising passenger anxiety over the need to rush. I argue that the switch from competition to coordination between lines and the paradox that efficiency improvements only encouraged more rush together drove the restructuring of the tube and the improvisational personal space that resulted. It was these changes that, ultimately, meant passengers came to mind the gap between each other as much as that between train and platform.

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[9] Christian Wolmar, *The Subterranean Railway: How the London Underground Was Built and How it Changed the City Forever*, (revised, London, 2012); Stephen Halliday, *Underground to Everywhere: London's Underground Railway in the Life of the Capital*, (Stroud, 2004); Richard Dennis, 'Making the Underground Underground', *The London Journal*, 38, 3, (November 2013), 223.

[10] TNA:PRO, MEPO/2/11018, June Kitchin, 27 May 1957.

Tracing this change matters because it helps us rethink key explanatory frameworks for twentieth-century Britain: subjectivity, governmentality, and modernity. A contained space where the routinization of touch and movement appear paramount, at first glance the tube seems the perfect example of liberal governmentality: a site where, to adapt Patrick Joyce's phrasing, passengers were ruled to rule themselves. It might appear a site where, through sustained intervention in the material environment, the state paradoxically evacuated itself from direct intervention in the lives of its subjects, creating a space in which those subjects were ostensibly free to act. This would be a space where the careful planning of entrances and exits, lines of movement and points of stasis would, through habituating tube passengers to particular ways of moving, thinking, and interacting, enable them to self-regulate as 'liberal' subjects and, ultimately, ostensibly monitor the state that at the same time guaranteed their freedom.[11] We can find echoes of this in J.B. Priestley's account, published in 1932, of how rush hours on the tube turned passengers into 'parcels' to be ordered and made self-ordering: 'Labels are pushed into their hands; trains are promptly loaded with them to full capacity; doors are opened and shut to admit them; they are hustled out, shot up in lifts, and only then, when the sweet cold rush of real air comes to meet them, are they allowed to turn back into ordinary men and women.'[12]

But the evidence of everyday encounters on the tube suggests a different story. Even for a critic such as Priestley, for whom the tube presented a strange 'nightmare of machinery', it would have been a mistake 'to deduce the inner from the outer facts of life, to imagine that

[11] Patrick Joyce, *The Rule of Freedom: Liberalism and the Modern City*, (London, 2003), 4; Patrick Joyce, *The State of Freedom: A Social History of the British State since 1800*, (Cambridge, 2013), 5-6. For examples of such an approach, though not from an explicitly governmentality perspective, see Richard Hornsey, *'"He Who Thinks, in Modern Traffic, is Lost": Automation and the Pedestrian Rhythms of Interwar London', in Tim Edensor (ed.), Geographies of Rhythm: Nature, Place, Mobilities and Bodies* (Aldershot, 2010), 101, and Richard Dennis, 'The Architecture of Hurry', in Katrina Gulliver and Heléna Tóth (eds), *Cityscapes in History: Creating the Urban Experience*, (Farnham: Burlington, 2014), 132-133.

[12] J.B. Priestley, 'Man Underground', in J.B. Priestley, *Self-Selected Essays*, (London, 1932), 75.

the mere mechanics give the key to everything'.[13] Focusing on specific, incidental tube encounters helps us avoid reducing passenger interaction to an expression of material change itself manifesting the pervasiveness of the liberal state. Instead, it allows us to think of a more interactive, variable, and localized relation 'between' bodies and their environment than that allowed by the paradigm of governmentality as often applied. Although recent work on liberal subjectivity counters these problems by highlighting how the use and failure of technology shape its power effects—pipes burst, concepts of privacy and secrecy conflict with attempts to make the city visible and legible—this nonetheless remains within a paradigm in which action is overdetermined by 'the rules of the liberal game'.[14] This article instead shows how touch on the tube was not shaped only within these rules, but rather involved what Michel Foucault in his last public lectures conceived as 'practices of the self' standing *independent* of and in relation to techniques of government.[15] In brief, personal space as it emerged on the tube by the 1950s followed its own improvised and improvisational logic.

This argument has two important implications. If personal space was not the defence of subjective boundaries that always existed but itself a contingent category that *constituted* those boundaries, then historicizing it calls into question the predicate of an autonomous self underpinning some histories of modernity and governmentality.[16] When Douglas Wood

[13] Priestley, 'Man Underground', 78.

[14] Joyce, *State of Freedom*, 54; Chris Otter, *The Victorian Eye: A Political History of Light and Vision in Britain, 1800-1910*, (Chicago: London, 2008); Tom Crook, 'Secrecy and Liberal Modernity in Victorian and Edwardian England', in Simon Gunn and James Vernon (eds.), *The Peculiarities of Liberal Modernity in Imperial Britain*, (Berkeley: London, 2011), 72-90. Citation from Joyce, *State of Freedom*, 29-30.

[15] Michel Foucault, '1 February 1984: First Hour', in Michel Foucault, *The Courage of Truth: The Government of Self and Others II: Lectures at the Collège de France, 1983-1984*, Frédéric Gros (ed.), Graham Burchell (trans.), (Basingstoke, 2012), 7. For a discussion of these lectures see Stuart Elden, *Foucault's Last Decade*, (Cambridge: Malden, 2016), 201-204.

[16] Despite its important critique of notions of the state as an ontological object and of distinctions between the natural and the social, recent governmentality theory still assumes, to differing degrees, an autonomous existence and implied coherence for the human subject in its relation 'with' the non-human world—a dualism readily admitted as problematic. See Patrick Joyce and Tony Bennett, 'Material Powers: Introduction', in Patrick Joyce and Tony Bennett (eds), *Material Powers: Cultural*

claimed that, being a 'regular passenger', he took no notice of fellow passengers and could not even recall whether he had been sitting or standing on the night of the murder, he hinted at how the habitual practice of personal space shaped its conceptualisation, in turn shaping the very perception of himself *as* a body in relation to others.[17] And if personal space constituted subjective boundaries that were only ever contingent, then it could never mark the point at which Britain 'became modern'. It could never mark the point at which Britons 'finally' became indifferent strangers but instead calls into question the concept of modernity as a description of a singular, successive condition of being itself.[18] That is the critical challenge of historicizing touch on the tube.

Minding the Gap: Automatic Doors and the Negotiation of Space in Tube Cars

The problem of minding the gap emerged at a point of crisis for the tube. Over the Great War tube traffic increased by two thirds and came to constitute half of London's total public transport journeys.[19] Partly this was an effect of wartime conditions as over a third of buses were commandeered for front-line service, resulting in a shift of passengers from overground to underground.[20] But it reflected a longer-term trend caused by the mushrooming of London's population by over 4.2 million between 1861 and 1911 and the development of the

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Studies, History, and the Material Turn, (London: New York, 2010), 11. For a critique of this problem through an historicization of 'habit' see Tony Bennett, 'Habit, Instinct, Survivals: Repetition, History, Biopower', in Simon Gunn and James Vernon (eds), *The Peculiarities of Liberal Modernity in Imperial Britain*, (Berkeley: London, 2011), 102-118.

[17] TNA:PRO, MEPO/2/11019, Douglas Wood, 4 June 1957; Shigehisa Kuriyama, *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine*, (New York, 1999), 13.

[18] Walter Benjamin, *The Arcades Project*, Howard Eiland and Kevin McLaughlin (trans.), Rolf Tiedemann (ed.), (Cambridge, MA: London, 2002), 116, Da,4.

[19] Wolmar, *Subterranean Railway*, 219.

[20] London Metropolitan Archives, London (LMA), ACC/1297/MET/10/381, London Traffic, 1919, 5; T.C. Barker and Michael Robbins, *A History of London Transport: Passenger Travel and the Development of the Metropolis*, (2 vols, London, 1974), II, 193-194.

West End as a leisure district and Whitehall as a nexus for commuting bureaucrats.[21] Traffic increase reached a critical point during the War as labour and materials shortages made the repair or addition of new rolling stock impossible. On the District Line alone, only 504 of 544 cars owned were serviceable because there were no means to repair the remaining forty.[22] This, combined with rising passenger numbers, resulted in worsening overcrowding, with a 36 per cent increase in the average number of passengers carried per Metropolitan Railway car over the War.[23] By 1919, the particular economic exigencies of the tube forced a new economy of bodies within it.

The problem was not just insufficient cars but uncooperative passengers. At the 1919 London Traffic Enquiry one company manager stated that the maximum service of 40 trains per hour required stops of no more than twenty-five seconds, an increase to an average of fifty-five seconds reducing the number of trains by ten per hour, and carrying capacity by a quarter.[24] Delays caused by congestion and dawdling passengers meant that in practice the timetable rarely converged with reality.[25] Various measures were attempted to align passengers with the tube's accelerated rhythm. At exceptionally busy stations like Oxford Circus barriers were erected on platforms to delay the crush until passengers had alighted, at which point a sliding bar was opened and boarding allowed. But this proved self-defeating as, given a free exit, alighting passengers were 'perhaps a little more leisurely in their movements', so extending the layover the measure was supposed to reduce. Knightsbridge station experimented with 'organized queuing'; while effective at quiet stations, the scheme proved unworkable at congested stations servicing multiple destinations.[26] The difficulty was

[21] Wolmar, *Subterranean Railway*, 119-120.

[22] LMA, ACC/1297/MET/10/381, London Traffic, 1919, 8.

[23] LMA, ACC/1297/MET/10/381, London Traffic Enquiry, 1919, 4.

[24] LMA, ACC/1297/MET/10/381, London Traffic Enquiry, 1919, 9.

[25] LMA, ACC/1297/MET/10/381, London Traffic, 1919, 10.

[26] LMA, ACC/1297/UER/4/73, W.E. Blake, 'The Traffic Problem of the "UndergrounD"', 15 January 1918, 8.

finding solutions with sufficient flexibility to accommodate variations in traffic between stations and at different times of day.

The layout of end-gate stock was especially troublesome. With the exception of Metropolitan and District stock, which had doors to every car compartment, the non-compartmentalized cars of every other line were only accessible from gated platforms at their ends before central doors were experimentally introduced in 1915.[27] Passengers were slow in moving between train and platform because the procedure happened at only two points of a car, or for the City and South London line at only one point, and was regulated by gatemen assigned to each car. Limited accessibility increased average layover as it took longer to board and alight and meant that full car capacity was often not reached because passengers alighting at the next station refused to inconvenience their exit by moving to the car centre. Longer stopping times meant fewer trains, less carrying capacity and, combined with unequal distribution of passengers in cars, longer waiting times for would-be passengers (Fig.2). Although a perennial problem, immediately after the Great War these structural complaints converged with the explosion and ostensible naiveté of passenger traffic and the rolling stock shortage to demand radical changes to the tube. Underlying those changes was a transformation in the tube's source of capital.

Tube lines were expensive. In the mid-1920s a line cost £850,000 per mile to construct and equip. It could be operated at a cost of two-thirds of its traffic receipts at the scale of fares for 1926, meaning it had to carry fifteen million passengers a year if every passenger travelled an average of three miles.[28] That was a lot of traffic for a line to generate by itself without buses depositing additional passengers at stations.[29] Because demand responded negatively to even small fare increases, raising fares to boost revenue was not a serious option. In 1913 the upper fare limit for the average commuter journey was estimated

[27] Graeme J. Bruce, *The London Underground Tube Stock* (Surrey, 1988), 45.

[28] London Transport Museum, London (LTM), PA16, Frank Pick, 'Growth and Form in the Modern City', 3 January 1926, 21.

[29] LTM, E11, Lord Ashfield, 'London's Traffic Problem Reconsidered', *The Nineteenth Century and After*, XCVI, 570 (August 1924), 171.

at 4d., any increase above this severely deterring passengers. The viability of tube lines primarily depended on traffic quantity. Given postwar overcrowding this might not seem problematic, but at the same time as being expensive to operate, tube lines were also unprofitable even when paying their way. In 1913 the Combine, that is, all tube railways excluding the Metropolitan, produced only enough profit for a meagre two per cent dividend.[30] Low profits made private investment unattractive as well as making it expensive to borrow capital. The tube therefore depended on heavy traffic to cover costs, but even then remained a low-profit enterprise.

This presented a paradoxical situation in 1919. Though overcrowding was severe, this was due to the rolling stock shortage rather than because lines were running at maximum capacity. Because the tube's economic viability depended on traffic volume it had further to increase its traffic, yet could only do this with the addition of rolling stock to alleviate existing congestion and expand long-term capacity. At £3.65 million the changes required could not be met by even optimistic projections of the amount the Combine could raise through profits or borrowing. The estimated shortfall was £2.75 million.[31] Prospects worsened when the economy slumped in 1920, reducing annual passenger journeys per capita from 410 to 380 the following year.[32] The tube simply could not fund itself.

Relief arrived with the 1921 Trade Facilities Act, which enabled tube companies to borrow at below-market interest rates guaranteed by the Treasury and so raise the capital necessary to expand service capacity. Though a palliative measure, its significance was far greater as the first public financial intervention, common to all companies, in the tube's history. It increased the size and unity of the tube's capital base, accentuating a trend towards financial integration between tube companies and with buses. It presaged a move from private to independent administrative control, from competition to coordination across all London transport, underlain by a shift from private to public ownership of capital. Most of these

[30] LTM, PE1, Albert Stanley [Lord Ashfield], 'London Traffic in 1913', September 1915, 38.

[31] LMA, ACC/1297/MET/10/381, London Traffic, 1919, 12.

[32] LTM, PA12, Frank Pick, 'Passenger Movement in London', n.d. (c.1923) 3.

changes were only fully realized a decade later but what is significant here is how the changing economy of the tube already intersected with a changing economy of touch on the network.

Work soon began refitting the City and South London Railway (CSLR). When it opened in 1890 the line carried three-car trains pulled by the first underground electric locomotives. Excluding end-platforms, each car was a stunted twenty-six feet long, accommodating thirty-six passengers seated on facing longitudinal seats; no provision was made for standing passengers. High-backed upholstery and slit windows soon earned the cars the wry nickname of 'padded cells'. Their cattle-truck exterior, sparse lighting, and absent seat or class divisions did nothing to dispel the impression (Fig.3). Under the renovation programme the line's tunnels were widened to comply with the standard diameter of 11ft 8.25in and its platforms were lengthened to accommodate more and longer cars. The new 'standard' stock, introduced first on the CSLR from 1923 and subsequently rolled out on other lines, increased seating capacity to up to forty-eight passengers per car. This potentially increased overall seating capacity from 160, or at a push 180, passengers per five-car CSLR train (1890 stock) to what in 1920 had been considered the ideal of 336 seated passengers per seven-car train (1923 stock).[33] This transformed the conditions of passenger relations on the CSLR. More spacious cars meant more flexible space for passengers to choose when they sat next to others and who those others were. A mixture of transverse and longitudinal seating divided by armrests reduced the possibility for passengers cramming in next to each other, eyeballing their opposites, though this remained possible for facing longitudinal seats (Fig.4).

While such changes were important, they continued developments in tube car space started when four new lines opened between 1900 and 1907. More significant was the inclusion of automated central doors on new rolling stock. Central doors were automated on forty new cars in 1919 but only became a widespread occurrence when introduced on the CSLR in 1923. Between 1923 and 1927, 736 cars with automated central doors were ordered

[33] Bruce, *Tube Stock*, 53-57; LTM, PE10, Lord Ashfield, 'London's Traffic Problem', May 1920, 10.

to entirely replace the manually-operated gate-stock on all Combine lines.[34] Seemingly a minor change, automated central doors fundamentally reordered touch on the tube for decades to come. By changing how passengers moved between train and platform they eased movement within cars and shifted the way passenger conduct was regulated.

Albert Francis's journey one evening in May 1957 is an example. A man sat opposite Francis eating a bar of chocolate, and another sat to his right. Two women sat to his left. The man sat to his right asked the man eating chocolate, whom he did not seem to know, for a piece, which he was given. A minute later he asked for more chocolate but was told it was 'all gone'. He then spat on the other man, drew a knife, and leaned over him just as the train pulled into Gloucester Road station. The threatened man alighted but the knife-wielding man remained.[35] This kind of occurrence owed much to the removal of gatemen effected by 1920s tube stock. In contrast to trains requiring up to six gatemen to operate the car gates, by 1927 automated doors required only one guard and removed the need for gatemen.[36] At the same time, 'minding the gap' entered London Underground discourse as new central doors created gaps at curved platforms (Fig.5). No longer a regulating presence of conduct on trains, tube staff came to manage the gap between train and platform while passengers were left to manage the gap between each other. While at Gloucester Road Francis leaned out of the car to report the incident to a porter, who only replied 'O.K. And mind the doors' and took no further action. The new tube stock opened up a gap between train and platform but also a charged gap between passengers freed from direct regulation and the constraint on movement imposed by end-gates.

When the train pulled away the man with the knife sat next to the two women who got up and sought reassuring seats next to Francis.[37] Left to themselves, passengers developed mutual understandings of personal space through which it was at once reified *and*

[34] Bruce, *Tube Stock*, 49, 53-59.

[35] TNA:PRO, MEPO/2/11019, Albert Francis, 25 May 1957.

[36] Bruce, *Tube Stock*, 57.

[37] TNA:PRO, MEPO/2/11019, Albert Francis, 25 May 1957.

transformed in every iteration.[38] Being a 'stranger' on the tube, as Cyril Power's linocut depicted it, necessitated a co-operation that *deferred* the inviolate boundaries which that co-operation was meant to fix. If tube travel exemplified modernity, then this was a modernity in which spatial relations between passengers became increasingly contingent, uncertain, and necessarily negotiated. Through the introduction of automated doors in the 1920s, the tube's modernity developed as a condition of spatial un-decidability requiring tacit agreement between passengers rather than the fixed anomie depicted by Power.

The novelty of this tacit knowledge of the tactile was shown by its advent in 1920s film. Opening in a crowded tube car, the melodramatic romance *Underground* (1928) depicted the ways passengers could, literally, put a foot out of place.[39] At the entrance of an attractive young woman a soldier and sailor jointly defer their seats, only to have them filled by other male passengers. One of these seat-grabbers, an electrician called Bert, then reads the newspaper over the shoulder of his neighbour, who glowers back. At the next stop insult is redressed with injury as the departing sailor gleefully treads on Bert's foot, while the latter's exasperated neighbour flings the newspaper onto his lap. By introducing its protagonist through his tube car misdemeanors, *Underground* reveals how tacit norms of personal space were gaining currency and becoming central to understandings of British character over the 1920s. Yet at the same time, spectacularizing those infringements showed they were still new enough to pass comment. The novelty of tacit tactile norms meant they still, ironically, depended on satirical, visual explication of their transgression.

Economies of Coal and Bodies: Electrification and the De-segregation of Space

Underground concludes with a vertiginous fight between Bert and Bill, Bert's competitor in love for a woman named Nell, on the rooftops of Lots Road power station. As the tube's principal power source in 1928, Lots Road is the ultimate stage for enacting the

[38] Benjamin, *Arcades Project*, 119, D10a,5.

[39] *Underground* (Dir. Anthony Asquith, 1928).

sexual jealousy that drives the plot and which originates in a tube car. The film's return to its primal scene highlights a crucial factor governing tactile relations on the tube: its power source. Two decades before automated doors, the possible forms of passenger interaction were already being reshaped by the restructuring of car space attendant on the transition from steam to electric power.

In part, worsening travel conditions necessitated this transition. In 1897 a Board of Trade enquiry estimated that the nineteen trains run each way per hour on the Metropolitan Railway emitted approximately 825 gallons of water as steam. With 528 passenger trains and fourteen goods trains running on this line per day, and with few ventilation shafts, the atmosphere in the tunnels was becoming insufferable. In response, the enquiry approved additional shafts on the condition that the Metropolitan electrified its trains within three years of an Act sanctioning this.[40] Competition from other railways provided an even more important inducement for electrification. Charging a flat fare of 2d. and offering smoke-free tunnels, the new electric Central London Railway, opened in 1900, poached a healthy portion of Metropolitan traffic, which fell from ninety-six million in 1899 to eighty-eight million in 1901.[41] Made possible by the creation of the giant Underground Electric Railways Company of London (UERL), more electric lines quickly followed. The Bakerloo, Charing Cross, and Piccadilly lines all opened between March 1906 and June 1907. Anticipating the inevitable, the Metropolitan began a partial electric service in January 1905 while the District, now absorbed into UERL, followed suite.[42]

UERL opened a coal power station at Lots Road in 1902 while the Metropolitan operated its own at Neasden from 1904. The tube's power source was relocated from locomotives to colossal Thames-side power stations, in turn shifting the possible ordering of bodies within tube cars themselves. In an analogy made on a poster at the time, 'The turbines

[40] LMA, ACC/1297/MET/10/250/002, Report, Enquiry into Ventilation, 1897, vi, ix-x, 1-6.

[41] Barker and Robbins, *History of London Transport*, II, 115.

[42] Barker and Robbins, *History of London Transport*, II, 106.

sleep/Like tops, and out/Of their sleep/Comes the strength/To move London'.[43] That movement occurred not just across the space tubes traversed but also *within* the restructured space of their cars as electrification ushered in the de-compartmentalization of rolling stock and subsequent mixing of classes and genders.

Prior to the CSLR opening in 1890, all tube stock was one of three classes and divided into compartments. In the 1860s the Metropolitan's first-class cars were divided into six compartments, with total seating for up to sixty, and its second- and third-class cars into eight compartments.[44] While it still reserved cars for women and smokers, the CSLR was the first line to provide classless, non-compartmentalized cars, but in practice a car half-partitioned into two sets of sixteen seats was not much different from a compartment on the Metropolitan, even if all classes now sat together. The major change to tube stock arrived with the Central Line and the UERL lines and Metropolitan Line competing with it. At 13ft longer and 1ft 8in wider than CSLR cars and with seating for an additional sixteen passengers plus straphangers, the classless, non-compartmentalized Central cars provided far more potential for social and spatial mixing.[45] The same was true of the three new UERL lines which ran motor cars with seating capacity of around forty-two passengers and trailers with seating capacity of around fifty-two passengers in trains up to six cars long. All cars were classless, non-compartmentalized, and entered by end-gates.

Electric trains with longer and more cars were made possible by the development in 1897 of multiple-unit control cars, or motor cars jointly controllable from a single point on a train. Long trains could now be powered without the necessity for heavy electric locomotives. Single UERL multiple-unit cars far exceeded whole CSLR trains in terms of power (480 h.p. compared to 100 h.p.) while still carrying over forty seated passengers.[46] Greater power meant quicker acceleration which, combined with an electric system of automatic signalling

[43] LTM, 1983/4/8124, Thomas Way, *Turbines, Lots Road, Chelsea*, (1911).

[44] Henry Mayhew, 'Metropolitan Railway', in Henry Mayhew (ed.), *The Shops and Companies of London and the Trades and Manufactories of Great Britain* (2 vols, London, 1865), I, 150.

[45] Bruce, *Tube Stock*, 13, 26.

[46] Barker and Robbins, *History of London Transport*, II, 111.

and the introduction in 1930 of electro-pneumatic braking, enabled shorter intervals between trains and a more frequent service.[47] Trains could also travel faster. Whereas the average underground steam train travelled ten to eleven miles per hour in the 1860s, electrification increased this to fourteen miles per hour by 1900 and eighteen to nineteen miles per hour by 1929.[48]

It was not only distance that increasing speeds eliminated but the spatial differentiation of class. Shorter journey times reduced the necessity for class and gender divisions by cutting the duration of potentially awkward social interaction. Where class divisions remained, as with some Circle Line trains in 1906, the more luxurious accommodation of new classless rolling stock made them redundant as passengers waited for the latter rather than shelling out for second class on the former.[49] Electrification was the final blow to a spatial layout that had only infrequently worked as intended. One first-class passenger in 1883 recalled his horror when, '[o]n arriving at the South Kensington platform, a seething, distracted, and vociferous crowd' poured onto the station from the Fisheries Exhibition. A 'forlorn hope' of people 'tumbled and hustled' into every compartment, regardless of class, until each became 'a miniature "Black Hole of Calcutta".'[50] While overcrowding in first-class cars here resulted from the tube's limited additional capacity in the face of traffic fluctuations, by 1919 the rise in average passenger density made straphanging in first-class cars more norm than exception. Even if this did not entail class mixing, one MP at the London Traffic Enquiry still regarded it as a breach of contract to not provide seats for all first-class passengers and suggested that segregated cars be abolished.[51] In practice, changes in passenger traffic had already overtaken the suggestion. In 1913, nearly all lines were classless and first-class traffic accounted for only four per cent of all traffic,

[47] LMA, ACC/1297/UER/4/73, Blake, 'Traffic Problem', 15 January 1918, 6.

[48] LMA, ACC/1297/UER/4/077, Operating Manager's Personal Letter No.8, 29 November 1929, 6.

[49] LMA, ACC/1297/MET/10/163, Report, A. C. Ellis, 22 February 1906, 1.

[50] LMA, ACC/1297/MET/10/38/2, *Daily Telegraph*, 31 October, 1883.

[51] LMA, ACC/1297/MET/10/381, Minutes of a Meeting of London MPs, 12 May 1919, 17.

excluding workmen's and season tickets.[52] For nearly all lines, electrification made class segregation no longer socially necessary or, increasingly, practically possible.

The discontinuation of class segregation and women-only compartments converged with the increasing presence of white-collar female passengers to dissolve the former ordering of tactile relations on the tube.[53] After the removal of gatemen, women in vulnerable situations in non-compartmentalized cars were more compelled to manage their surrounding space, especially relying on the tacit cooperation of other passengers. When Mabel Petley caught the tube from Wimbledon one evening in May 1957 she chose an empty car. But a young man soon joined her and stood at the doors nearest her seat clutching a knife and staring. After an older man entered and sat at the end of the car Petley joined him, pretending she needed a light. Besides the obvious wish to distance herself from the knife, this was also a case of readjusting a postural economy by substituting oppositional with adjacent proximity, so interrupting eye contact, and disparate height with the equal height of two seated passengers. The gesture also enacted a response to the subcultural challenge posed by some 1950s adolescents, the forty-nine-year-old secretary reclaiming a bodily-forfeited social status by moving from the standing man 'of Teddy boy appearance' to her seated peer, though in so doing calling that status further into question.[54]

This economy of bodies was particular to higher numbers of independent female travellers and anxiety surrounding Teddy Boy culture in the 1950s. But it also owed to earlier changes in the speed and shape of tube cars caused by the relocation of coal as a power source from within tube tunnels to outside of them. The bodily technology of personal space on the tube was informed by and responded to transformations in the technology of the electric engine.

[52] LTM, PE1, Stanley [Lord Ashfield], 'London Traffic in 1913', September 1915, 30.

[53] TNA:PRO, MEPO/2/11019, Valerie Thompson, 27 May 1957, Dorothy Baker, 4 June 1957, Patricia Rowan, 12 June 1957.

[54] TNA:PRO, MEPO/2/11019, Mabel Petley, 27 May 1957.

The History of Impatience: Temporal Perception and Escalator Etiquette

At 5.26 p.m. on 13 February 1928 Mr J. Broom was in a hurry. As a compartment stock train drew away from Baker Street station Broom dashed down the platform steps and, disregarding shouts from dispatch staff, leapt towards a compartment. Somehow his foot slipped, though, causing him to fall between the car and platform and be wrenched onto the permanent way. He did not survive the incident.[55] Though Broom no doubt had reason to rush, the next train would not have been a long wait. When the Circle Line opened in 1884 the average interval between peak-time trains was ten minutes; by 1897 this had been cut to three. Electric trains were even more regular, with peak-time trains arriving every two minutes when the Piccadilly and Charing Cross Lines opened in 1906 and 1907.[56]

Yet rather than resulting in nonchalant acceptance that a missed train meant briefly waiting for another, efficiency improvements failed to alleviate passenger frustration. Interwar Metropolitan Railway accident books show that Broom was not the only one to suffer injury when rushing for a train despite the decreasing reason to do so.[57] It was almost as if passengers hurried *because* tube travel was more efficient.[58] One of the causes of this paradox was the increased regularity of electric tube trains: as intervals between trains dropped, their perceived duration increasingly diverged upwards from their actual duration, generating continued frustration at the perceived inefficiency of the journey overall. That is, because we tend to overestimate short time periods and underestimate long ones, a reduction in the duration of a short interval – that of waiting for a train – paradoxically led to increasing

[55] LMA, ACC/1297/MET/4/003, Register of Accidents and Special Occurrences No.7, 1921-1928, 13 February 1928.

[56] Wolmar, *Subterranean Railway*, 86-88, 98; Desmond F. Croome, *The Circle Line, Including the Hammersmith and City Line* (Harrow Weald, 2003), 24; Barker and Robbins, *History of London* Transport, II, 116.

[57] LMA, ACC/1297/MET/4/003, Register of Accidents and Special Occurrences No.7, 1921-1928; ACC/1297/MET/4/005, Register of Accidents and Special Occurrences No.9, 1932-1933.

[58] For the new pace of tube travel after electrification see Edwin Pugh, *The City of the World: A Book About London and the Londoner*, (London, n.d. [c.1912]), 116-118.

*over*estimation of that interval.[59] In short, as tube passengers had to wait less time for trains, they became more keenly aware of the time they *did* have to wait. Although not exclusive to electric tube travel, this sense of time assumed a particular coherence on the tube in a way it did not on buses until after the mid-1920s.[60] Whereas tube trains stopped at every station in short, uniform intervals, before the 1920s motorbuses had neither a timetabled service nor fixed stops. They instead collected and deposited passengers as and when required. Fixed stops were experimentally introduced in 1920, with an average of four compulsory stops per mile and an additional two optional ones, but it was only after the 1924 London Traffic Act that buses were required to provide a regular service on set approved routes.[61] Waiting for the bus was therefore different from waiting for the tube. The length of the wait and duration of the journey depended on the quantity of bus traffic and number of stops a bus made before and after collecting a passenger. Even though the time between trains might be shorter than that between buses it was precisely its predictable brevity that generated impatience.

This might seem even less reasonable given that in 1920 the average tube train speed was eighteen miles per hour compared with ten miles per hour, including three to four stops per mile, for buses.[62] But in their early years motorbuses appeared more convenient than tube trains, as they surely were for short-distances. Buses compared favourably against the tube because they were accessible at street level and because tickets could be purchased on board; bus routes and the quantity of buses could also respond to geographical and temporal

[59] Physician Karl von Vierordt first formulated this inverse relation between the perception of time intervals and their duration in his *Der Zeitsinn nach Versuchen* (1868). On 'Vierordt's Law' see John Wearden, *The Psychology of Time Perception*, (London, 2016), 12-13, and Helga Lejeune and J. H. Wearden, 'Vierordt's *The Experimental Study of the Time Sense* (1868) and its Legacy', *European Journal of Cognitive Psychology*, 21, 6, (August 2009), 941-960.

[60] For the increasing attention given to short time intervals from the late-nineteenth century see Stephen Kern, *The Culture of Time and Space, 1880-1918*, (Cambridge, MA: London, 1983, reissued 2003), 110-111.

[61] LTM, PA5, Frank Pick, 'The Place of the Motor Bus in Urban Passenger Transport', October 1920, 4; E11, Ashfield, 'London's Traffic Problem Reconsidered', August 1924, 176.

[62] LTM, PA5, Pick, 'The Place of the Motor Bus', October 1920, 4; PE10, Ashfield, 'London's Traffic Problem', May 1920, 7-8.

variations in demand.[63] While these features already applied to horse omnibuses, they combined with the increased acceleration of motorbuses to place them beyond tramways in terms of speed (averaging nine miles per hour) and in competition with the tube in terms of convenience.[64] 'On the comparatively short journeys with which we deal,' worried the tube's superintendent of the line in 1918, 'any time spent in waiting […] bears a large proportion to the total time occupied on the journey, and, if unduly lengthy, will be sufficient to deter passengers from using the Railways'. Inefficiencies could reduce the speed of a tube journey to only four miles per hour, and the actual time spent travelling to less than a third of the total journey time, making it much quicker to travel short distances by bus.[65]

One way for tube companies to reorganize passenger flow was to change how passengers moved between platform and booking hall.[66] Electrification made more powerful lifts possible but early models attracted negative comment from passengers who resented crushing together.[67] The alternative, developed soon after, was the escalator. The first made its remarkable debut in 1906 at Holloway Road Station as a rotating double helix that conveyed passengers through a vertical shaft (Fig.6). It was declared irredeemably unsafe after a day of service. The next to enter operation, a linear design, opened at Earl's Court station in October 1911.

Escalators rationalized movement between booking hall and platform by changing the relationship between the distribution of passengers and the speed at which they moved. What escalators lost in speed compared to lifts they gained through evenly spacing passengers and dividing them from those in a hurry. At a rate of one hundred feet per minute the first was,

[63] LTM, PA5, Pick, 'The Place of the Motor Bus', October 1920, 7-8.

[64] LTM, PA5, Pick, 'The Place of the Motor Bus', October 1920, 5.

[65] LMA, ACC/1297/UER/4/73, Blake, 'Traffic Problem', 15 January 1918, 1-2.

[66] See also the introduction of automatic ticketing: LMA, ACC/1297/UER/4/077, Operating Manager's Personal Letter No.14, 16 November 1932; ACC/1297/MET/10/355, Report on Automatic Ticket Machines by Messrs. Holt, Ballingall and Fiske, 14 July 1919.

[67] Wolmar, *Subterranean Railway*, 154.

albeit optimistically, projected to carry 10,800 passengers each direction per hour.[68] By contrast, the three high-speed lifts at Hampstead station, which operated at 360 feet per minute, or a thirty-second service over 180 feet, were conservatively estimated to carry only 2,400 passengers in only one direction per hour.[69] Through the regular arrangement of space occupied across time, escalators conveyed a greater number of passengers per hour. Though lifts travelled faster, their discontinuous service condensed space into a smaller number of discrete blocks occupied across time; passengers crossed the distance quicker, but only through collecting at lift entrances and jostling in when it arrived. This increased overcrowding, frustrated passengers, and caused further delays. In an incident at Lancaster Gate station one passenger left behind by an ascending lift rang the call bell continuously until it reached the top landing and returned. When he arrived at the booking hall he expressed annoyance at the lift attendant by jamming his walking stick between the lift doors to prevent them from closing.[70] In contrast with lifts, escalators achieved a continuous sequentialization of space and time between booking hall and platform, reordering tactile relations between passengers through regular spacing and reducing impatience by leaving room for sprinters. If, that is, passengers stood on the right.

The etiquette of standing on the right of escalators coincided with, and in part resulted from, the apparent convenience of motorbus travel. Curbside access to faster buses necessitated rationalizing access to tube trains, part of which involved enabling passengers to overtake. Barriers and signs prompted the new conduct. On the first escalators the handrail cut diagonally rightward across the point where the steps evened out, allowing those standing on the right to step off without being cut up by those walking on the left (Fig.7). Early signs seem to have directed passengers to step off with the left foot first but at some point this

[68] *The Illustrated London News*, 14 October 1911, 593; LMA, ACC/1297/UER/4/077, Operating Manager's Personal Letter No.8, 29 November 1929, 9.

[69] Transport for London Archives, London (TfLA), (NEW) LT/150/014, Letter from W.Y. Lewis to Mr Agnew and Mr Baker, 28 February 1930.

[70] TfLA, (NEW) LT1455/1276, Statement by London Transport employee (anon.), n.d. (c. June 1963).

changed to the right foot.[71] The latter instruction was sufficiently well established by 1928 to be satirized by *Underground*, which showed a puzzled soldier struggling not to step off left foot first, the convention for military step.[72]

Although these instructions standardized the space between passengers they did not, however, prevent unwanted touch and in some instances encouraged it. One afternoon in May 1957 Susan Haynes arrived at the Lyons Corner House on Coventry Street for her shift. Before she began work she discovered a vertical cut running nearly five inches down the back of her skirt, slightly to the left. A little earlier, when stepping onto the Piccadilly Circus station escalator, she had noticed a young man standing at the bottom walk smartly behind her onto the lower step and, thinking this suspicious, clung onto her handbag. It only later transpired that it was not her handbag she had to watch, the position of the slit being consistent with the area exposed as she stood on the right of the escalator.[73] Since escalators equalized the distance between passengers and separated the fast from the slow, the hustle of lifts gradually gave way to the apparent safety of open, regularized space—and the risk that assurance created.

By 1919, the severe bus shortage in London meant less competition with the tube and so less cause for impatience with its comparative inconvenience. The growing coordination between tube services and LGOC buses since 1912 also meant passengers increasingly saw each as supplementing rather than substituting the other. But new grounds for impatience soon emerged which contributed to further rolling stock restructuring. One of these was the increasing difference between running for the tube and running for the bus. After automated central doors were introduced to new rolling stock in 1919, hurrying was no longer dictated by gatemen closing car platforms but by air-compressed doors. Boarding buses, by contrast, was regulated by conductors, automated doors only appearing on public central London

[71] *The Illustrated London News*, 14 October 1911, 595; *Underground* (1928).

[72] I am grateful to Lynda Nead for this comment.

[73] TNA:PRO, MEPO/2/11019, Susan Haynes, 31 May 1957.

services in 1965.[74] Automated doors induced further hurry by presenting a 'beatable' target. Initially, the edges were sensitized with contact breakers, allowing passengers to cut the circuit of closing doors and force their way into cars but this feature was soon removed, apparently because by encouraging hurry the system was causing the delays it was intended to resolve.[75]

The ferocious resurgence of competition between buses also caused impatience with the tube. Between late 1919 and mid 1924 total bus stock rocketed from 2,761, with a seating capacity of 93,000, to 4,790, with a seating capacity of 220,000, a 73- and 137 per cent increase respectively. Over the same period annual bus traffic increased from 727 million to 1340 million, an 84 per cent increase which near-negated the capacity gains.[76] Within this growth in bus numbers the new player, the first of which began running in August 1922, was the independent, or 'pirate', bus.[77] Although only a fraction of the total increase, independents offered alternative bus travel separate from the LGOC and in some cases altogether more frenetic.[78] Rather than carving out new routes some independents tried capturing existing traffic by racing competitors or even changing direction if there was a larger queue of passengers on the other side of the road. Convenience and accessibility, not fares, were the competitive stakes; a contrast to the tube, it seemed, with its labyrinthine tunnels and synchronized denial of automated doors working on a timetabled service.[79] For Lord Ashfield, UERL general manager, the solution to passenger impatience was to provide express lines running parallel to regular stopping services. But their prohibitive cost meant the

[74] Bruce, *Tube Stock*, 49; Colin Curtis, *Buses of London: An Illustrated Review*, (2nd ed., London, 1979), 145-148; Ken Blacker, *Routemaster*, (2nd ed., 2 vols, Harrow Weald, 1995), I, 84-86.

[75] Bruce, *Tube Stock*, 50.

[76] LTM, E11, Ashfield, 'London's Traffic Problem Reconsidered', August 1924, 167.

[77] For horse-powered forerunners of the 'pirate' motor bus, operating in the 1890s, see Shaw Desmond, *London Nights of Long Ago*, (London, 1927), 41.

[78] LGOC bus drivers occasionally responded in equal measure: see the traffic accident case before Lambeth Police Court: LMA, PS/LAM/B/01/006, Minute Book, 20 April 1926.

[79] Barker and Robbins, *History of London Transport*, II, 222-227.

only viable alternative was not to increase speed, but to increase train capacity to reduce waiting on stations during rush hour.[80]

'Rush Hour' and the Rise of the Straphanger: Improvised Intimacy

Although the tube had always experienced daily rush periods, the coalescence of 'rush hour' from 1919 shaped the particular form taken by tube car restructuring and contrasted it with the simultaneous restructuring of buses.[81] Between 1919 and 1920, trade union efforts won an eight-hour day for seven million workers nationwide.[82] This reduced the preferred window of time for commuting and raised pressure on the tail end of workmen's tube trains in London offering reduced fares for early-morning travel. Although workmen's traffic only constituted 16 per cent of total traffic in 1913 it was responsible for the dominant morning peak.[83] The standardization of the eight-hour day meant that the peak in workmen's traffic increasingly converged with the smaller peak in later traffic, compressing a greater number of people into a smaller time, worsened by the overall postwar increase in traffic. Unlike the tube, buses in 1913 did not have workmen's fares. They consequently did not have comparable traffic peaks as the tube deprived them of a large share of traffic before 8 a.m. By contrast, Lord Ashfield pointed out that motor bus traffic 'consists of traffic causally picked up all day long, so long as there is traffic in the streets. The motor buses are always

[80] LTM, PE10, Ashfield, 'London's Traffic Problem', May 1920, 7-10.

[81] For the new experience of a 'rush hour' see Robert Lynd, 'The Morning and Evening Rush', in St. John Adcock (ed.), *Wonderful London: The World's Greatest City Described by its Best Writers and Pictured by its Finest Photographers*, (3 vols, London, 1926), II, 580-591, and Charles G. Harper, *More Queer Things About London*, (London, 1924), 15-16. For the reordering, albeit uneven, of social time see Vanessa Ogle, *The Global Transformation of Time, 1870-1950*, (Cambridge, MA: London, 2015), Chapter 2, and Jürgen Osterhammel, *The Transformation of the World: A Global History of the Nineteenth Century*, Patrick Camiller (trans.), (Princeton: Oxford, 2014), 71-75.

[82] H. Cunningham, 'Leisure and Culture', in F.M.L. Thompson (ed.), *The Cambridge Social History of Britain, 1750-1950* (3 vols, Cambridge, 1990), II, 281-283.

[83] LTM, PE1, Stanley [Lord Ashfield], 'London Traffic in 1913', September 1915, 23, 30.

reasonably full throughout the day.'[84] When the consolidation of the eight-hour day pushed workmen's traffic into 'ordinary' traffic the tube therefore suffered a greater intensification of peak traffic than buses did. This likely fed into existing impatience particular to the intervals between tube trains. Rush hour overcrowding reduced the probability of catching the first train, making the interval between the one missed and the one anticipated seem increasingly critical.

As with the tube, the postwar increase in traffic necessitated restructuring bus space to increase capacity, but the greater daily fluctuation on the tube, and the particular impatience it caused, meant this occurred differently on each. Since 1906 a standard double-decked motorbus carried only thirty-four seats, sixteen of which were longitudinal seats running along the lower deck. Because police regulations strictly limited bus dimensions any increase in capacity had to be achieved through changing their layout rather than their size. In 1919 the development of wheel arches made it possible to lower the floor of the bottom deck, reducing the distance between it and the road and so, when combined with a reduction in the height of the bus, lowering the bus's centre of gravity. This and improved suspension allowed buses to carry the weight of additional passengers. LGOC consequently replaced its longitudinal seats with transverse seats in sets of two facing the front of the bus, increasing lower deck capacity to twenty-two; it also increased upper deck seating, bringing total capacity to forty-six. This set the pattern for enduring differences between bus and tube travel as bus passengers no longer sat in rows facing each other but on segregated seats facing forward. A mixture of longitudinal and transverse seating, roughly two-thirds to one-third ratio, persisted on the tube. The removal of longitudinal seating on buses also reduced standing space; the new K-type bus accommodated at most ten standing passengers.[85] Partly this reflected the police prohibition on standing, relaxed during the Great War, when five standing passengers were allowed, but reimposed shortly after.[86] Writing in 1920, Frank Pick,

[84] LTM, PE1, Stanley [Lord Ashfield], 'London Traffic in 1913', September 1915, 22-23.

[85] LTM, PA5, Pick, 'The Place of the Motor Bus', October 1920, 9-10.

[86] Barker and Robbins, *History of London Transport*, II, fn., 218.

assistant managing director of UERL, hoped this restriction would soon be lifted.[87] However, it arguably fitted the growing functional differentiation of buses from tube trains resulting from the consolidation of rush hour: buses were not to absorb the daily peaks in traffic but to service the constant flow of casual, mainly short-distance traffic.

Tunnel dimensions, not police regulations, limited tube car size but similarly meant that capacity could only be increased by changing car layout. Unlike buses, though, there were no restrictions on standing. Besides, it was easier for more passengers to cram in if they were standing, making increasing standing space the best way to meet the greater quantity and fluctuation of tube traffic. Ashfield calculated that an arterial road with a maximum of 150 forty-six-seater buses running each direction per hour could carry 7000 passengers. A tube line already managed 13,500 seated passengers per hour but with the addition of only half of its estimated standing capacity this increased to 20,000.[88] While buses maximized capacity by only increasing seating, the growing functional difference of the tube, occasioned by rush hour, meant capacity increases were expressed as much through standing space as seating. Although the Central Line introduced the first straps for standing passengers in 1900, straphanging became more of a phenomenon in the interwar because the increasingly distinct roles that buses and tube trains played was also increasingly materially expressed: seats on buses; standing space in tube cars. This is why the ban on standing in buses kept it as an option, and increasingly a necessity, on the tube.

If impatience with the tube depended on its contrast with buses, how were the tube's structural solutions to this impatience and the personal space that resulted also different? The experience of twenty-two-year-old Ann Pilcher is an example. Pilcher commuted daily from a boarding house in Gloucester Road to Westminster in spring 1957.

> About February of this year I first became aware of a man who later attracted my attention a number of times. […] We were both standing. At first we were apart but

[87] LTM, PA5, Pick, 'The Place of the Motor Bus', October 1920, 9-10.

[88] LTM, PE10, Ashfield, 'London's Traffic Problem', May 1920, 11.

> later, as people moved about, he came close to me. He leered and half smiled at me but I took no notice. He didn't speak to me on that occasion or touch me but about three days later he was again on the same train as me and he then said, "Good morning to me". [*sic*] I didn't speak.
>
> He made no further effort to engage me in conversation but continued to stare and smile at me. I saw this man three or four times more in the mornings but he made no further approach to me.[89]

The option and, as here, increasing necessity to stand on the tube during rush hour configured passengers in a different way from buses. Not only could the man in this incident move to join Pilcher, he could also press closer than if they were seated, making it harder to avoid eye contact. The freer movement of standing passengers required them tacitly to formulate a concept of personal space in a way that bus seating did not.

In part, the fact that all tube seats faced each other whereas all bus seats faced forwards supported this, but in a way different from straphanging. Late one evening in June 1957, twenty-year-old Patricia Miatt was travelling home from the West End. She sat 'on the inside seat of the type that face each other' and found herself opposite a young man 'with very dark blue "staring" eyes.' The man struck up conversation about the book Miatt was reading, but she gave terse, non-committal responses. She continued reading but was nervously aware of the man watching her in the window reflection.[90] Oppositional seating made avoiding eye contact just as hard as standing did and so similarly compelled passengers to tacitly agree on personal space. But though Miatt's experience was similarly awkward to Pilcher's, the latter's was less determinate, less predictable, because the space she occupied was less demarcated. Regardless of its orientation, seating delimited physical and social boundaries for touch in ways absent from standing space, which is perhaps why Miatt, albeit reluctantly, responded to conversation whereas Pilcher did not.

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[89] TNA:PRO, MEPO/2/11019, Ann Pilcher, 18 June 1957.

[90] TNA:PRO, MEPO/2/11019, Patricia Miatt, 1 June 1957.

This risk of space between standing passengers compelled them to develop a personal space that was at once more fixed and more improvisational. The tension was best expressed when passenger vigilance revealed the assumption of common rules for personal space but admitted the indeterminacy of those rules and the need to enforce them. At almost the same time that Lubienska was murdered, Frederick Ayres caught a Piccadilly Line train from Knightsbridge station. The train was crowded, and Frederick stood in the doorway. Just before the train departed a 'very agitated' man leapt in next to Frederick: he appeared 'a nasty character in spite of the fact that he was very well dressed.' Because of this, Frederick thought to himself 'I will keep an eye on you in case you start something'. The man 'kept looking round at everybody in the train as though he was looking for somebody or somebody was looking for him' and so Frederick 'was determined at all costs to be ready for him'.[91] Aware of a set, collective understanding of personal space, Frederick was equally aware that open tube car space was unpredictable and might require an improvised response. Rather than defending an already-existing concept of personal space, Frederick brought that concept into being *through* a practice that was just as contingent; one that emerged as it became easier to move around tube cars and that reified and risked itself every time it was enacted.

Open space heightened the dialectic between tacit norms of personal space and explicit improvisations, such as reprimanding passengers, when these collapsed. It is not just that norms and improvisations were conditions for each other, but that the particular *indeterminacy* of open cars demanded determination of personal space but became, through that attempt, indeterminable. Passengers therefore had to improvise. 'With elbows wedged into your ribs, and strange hot breaths pouring down your neck,' wrote the author Thomas Burke in 1919, 'you need all the serenity you have stored against such contingencies; and the attitude of the other people about you can mitigate your distress or enhance it.'[92] The tube's modernity was that of an ongoing making and remaking of subjective boundaries in

[91] TNA:PRO, MEPO/2/11019, Letter from Frederick Ayres to Superintendent of Kensington Police Station, 7 June 1957.

[92] Thomas Burke, *Out and About: A Note-book of London in War-time*, (London, 1919), 99.

conditions of intrinsic *in*-determinability, not the final establishment and defence of those boundaries.

Queer Spaces: The Disturbing Effects of Tube Platforms

While Mary Eastwood rode the tube one Friday evening in 1957 she noticed a man 'wearing a vivid yellow sweater with coloured stripes running diagonally across it'. 'He was the type of person', she confessed, 'I hoped would not get off the train at the same time as myself.'[93] Her concerns hint at the difference between cars and platforms as social spaces. As sites of interchange, platforms expressed a liminality different from cars. Passengers' presence on platforms was conditioned only by the interval between trains, whereas their presence in cars was indefinite, although potentially equally transitory. While it compelled improvisation, the intimacy of cars was as much a benefit as a threat to vulnerable passengers compared to the expanse of stations. Without the constant presence of other passengers, stations offered more possibilities and risks to the socially marginal to suspend the very conditions under which their marginality materialized: to 'queer'.

I do not mean queer as a category of identity, defined by same-sex desire. Or even as an identity defined by its opposition to the norm. I mean instead the refusal to be subsumed within a sexual or social identity, or to accept a distinction between the two.[94] Station space did not make it easier to 'be' queer, or meet others who were, but rather to take a stance relative to categories of social and sexual identities *themselves*.[95] The streamlining of stations, for example through escalators or the cavernous 'ambulatory' booking hall opened at Piccadilly Circus in 1928, accentuated their function as in-between spaces to traverse as

[93] TNA:PRO, MEPO/2/11019, Mary Eastwood, 3 June 1957.

[94] Matt Houlbrook, 'Thinking Queer: The Social and the Sexual in Interwar Britain' in Brian Lewis (ed.), *British Queer History: New Approaches and Perspectives* (Manchester, 2013), 135-164; Laura Doan, *Disturbing Practices: History, Sexuality, and Women's Experience of Modern War* (Chicago: London, 2013).

[95] Lee Edelman, *No Future: Queer Theory and the Death Drive*, (Durham: London, 2004), 3-6.

quickly as possible.[96] This liminality offered possibilities for encounters between the socially marginal *in between* the times and spaces in which identity distinctions of normality and difference cohered.

Take Frederick Williams, a West African student, whose encounter with a flirtatious woman in Gloucester Road station one night in May 1957 offered queering possibilities and limitations. Williams was leaving a platform when a young white woman with a non-English accent approached him, asked for a light, and began playing with his jacket lapels. A brief chat-up later, she jotted down her number and said she would like to hear from him again. Contrary to Williams's usual sexual possibilities as one of the Windrush generation, the platform's liminality enabled a new social liminality, not *as* a black man but temporally and spatially *in between* the conditions under which his blackness cohered as difference. Williams's sexual desire intersected with station space to suspend an identity that marked him as different. Though this was a 'social' rather than 'sexual' identity its suspension elided these categories by disturbing the conditions on which they were based: that one have an identity ordered within a binary of norm and difference. In other words, it was just as queer.

But it was also *contingent on* the particular liminality of the station. Three times Williams sought the woman at various Lyons teashops, where she had said she worked, but to no avail. He tried her number from multiple exchanges. Yet he also claimed to have resisted her initial advances, trying only to escape.[97] Partly retrospective justification of contact with a woman he now suspected of murder, the contradiction also suggests that the platform's liminality perpetuated as much as collapsed identities of social difference when its encounters transcended themselves and entered police records. If Williams's sexual desire intersected with the liminal space of the station its queer effects could not escape categorization by the recording Detective Inspector.

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[96] LTM, PB21, Frank Pick, 'The Design of Modern Railway Stations in Europe and America', *Journal of the Royal Institute of Architects*, 37, 10, (March 1930); *The Illustrated London News*, 15 December 1928, 1145

[97] TNA:PRO, MEPO/2/11018, Frederick Williams, 7 June 1957.

The inconsistencies in Williams's account reveal what divided mid-century cars and platforms as social spaces. Whereas passengers traversed the fixed space of platforms, they were fixed within the moving space of cars. The open-plan space of 1950s cars demanded the fixing of personal space but also, because of its indeterminacy, precluded it and necessitated improvisation. But because tube cars were *confined* and more consistently occupied, rather than traversed, passenger co-operation made it possible, if not certain, for improvisation to re-determine personal space. By contrast, the traversed space of stations – equally indeterminate – had fewer tacit rules of tactility and fewer consistently present passengers with which to improvise them. This was a space disturbed by constant movement and constitutive of social relations that disturbed.

Yet what ties together queerness in stations and personal space in tube cars is the contingency of these as explanatory categories themselves. To 'act' queer or 'have' personal space depended on the interaction of concept and practice with the material transformation of the tube: it depended on the particular *use* of tube space at particular times in its development. Examining this interaction therefore destabilizes our own narratives treating categories of queerness and personal space as historical or analytic givens.[98] Frederick Williams's queerness was at once particular to the space of Gloucester Road station in 1957 *and* called into question the stability of 'queer' as a trans-historical analytic category. If tube stations disturbed social relations, they also disturb our own categories for explaining the passenger interactions occurring within them, and on the tube as a whole.

Conclusions: From Ealing Common to Gloucester Road, 24 May 1957

We do have one piece of evidence for Lubienska's practice of personal space on the tube: the statement of her companion, the priest Kazimerz Krzyzanowski. When they entered Ealing Common station, Krzyzanowski recalled, they 'walked twelve paces from the staircase

[98] Quentin Skinner, 'Meaning and Understanding in the History of Ideas', in Quentin Skinner, *Visions of Politics: Regarding Method*, (3 vols, Cambridge, 2002), I, 84-86.

on the East Bound side and entered a smoking carriage at that point. We sat on a seat which ran across the train, on the offside […]. The Countess sat by the window and I was at her side.' There were other passengers in the car but Krzyzanowski disregarded them as he was immersed in conversation with Lubienska. He did however recall that they were quiet. Upon arriving at Earl's Court he alighted from the same side on which he had been sitting, and 'had to walk about twelve yards towards the front of the train to a lift'.[99] Through this recollection Krzyzanowski reenacted a whole commerce between his mind, postural disposition, and his relation to other bodies. He reenacted a finely calibrated relation between the arrangement of his limbs and the arrangement between himself and others that it effected. This was a transaction contingent on the particular instance in which it was enacted, but more importantly on the *confined indeterminacy* of the 1950s tube car. Seemingly pre-given, this practice of personal space emerged as cause and effect of a series of transformations in the experience of tube travel, from automatic doors to the intensification of hurry.

This calls into question accounts of modernity as a dialectic of intimacy and anomie for individuated bodies 'possessing' personal space. Personal space was not owned but practiced, not constant but specific, in turn reshaping the delineation of the body itself in its relation to other bodies. This is not to say that the emergence of personal space on the tube enacted a new relation 'between' inner and outer self and between self and other, as if these were stable binaries. Instead, it *produced* these binaries and, because it was practiced in an indeterminate space, produced them *differently* on every occasion.[100] This compels a reassessment of governmentality narratives that assume the stabilization of these binaries by the 1920s.[101] If the tube produced neither stably individuated subjects nor a stable relation between inner and outer that encouraged those subjects to self-regulate, then it was not a space through which citizens were governed to govern themselves. It did not manage, or even

[99] TNA:PRO, MEPO/2/11018, Kazimerz Krzyzanowski, 25 May, 29 May, 1 July 1957.

[100] See Elaine Hadley, *Living Liberalism: Practical Citizenship in Mid-Victorian Britain* (Chicago: London, 2010), 5, 8-9, 12-17, and Judith Butler, *Senses of the Subject* (New York, 2015), especially the introduction.

[101] Joyce, *State of Freedom*, 3-6, 27-28.

produce, the relation between a passenger's thought and embodied experience required to create the self-governing liberal subject. It could not, in short, reduce the biological life of its passengers to a political effect; the 'politicization of bare life' that Giorgio Agamben argues underlies modern liberal democracies as much as dictatorships.[102] In narrating this ostensible history, historians of governmentality unwittingly reproduce it, denying the possibility for past or future forms of existence outside those circumscribed by the liberal state. Historicizing the conceptual and practical co-evolution of personal space and how it mediated the relation between subjectivity and the state points us away from this spiral, towards histories containing the possibility for their own, different futures.

[102] Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life*, trans. Daniel Heller-Roazen, (Stanford, 1998), 1-5.